

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

GETTING STARTED GUIDE

NI USB-5132/5133

Bus-Powered USB Oscilloscope

This document explains how to install, configure, and test the NI USB-5132/5133 (NI 5132/5133). The NI 5132/5133 is a bus-powered USB oscilloscope.

To access NI 5132/5133 documentation, navigate to **Start»All Programs» National Instruments»NI-SCOPE»Documentation**. In Windows 8, click **NI Launcher** and select **NI-SCOPE** in the window that appears.

Contents

Electromagnetic Compatibility Guidelines....2
Verifying the System Requirements....2
Unpacking the Kit....2
Preparing the Environment....3
    USB Modules....3
Kit Contents....3
    Other Equipment....4
Installing the Software....4
Installing the Hardware....4
    Providing USB Cable Strain Relief....5
    Mounting the USB Device....6
Configuring the NI 5132/5133 in MAX....8
Programming the NI 5132/5133....9
    NI-SCOPE Examples....10
    Programming Flow....11
Making a Measurement....12
    Making a Measurement with NI-SCOPE SFP....12
    Making a Measurement with LabVIEW....12
Troubleshooting....12
    What Should I Do if the NI 5132/5133 Doesn't Appear in MAX?....12
    What Should I Do if the Device Fails the Self-Test?....13
    What Should I Do if the Back Panel LED Remains Off When the NI 5132/5133 is Plugged In?....13
Where to Go Next....13
Worldwide Support and Services....14

NATIONAL INSTRUMENTS

Electromagnetic Compatibility Guidelines

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) stated in the product specifications. These requirements and limits provide reasonable protection against harmful interference when the product is operated in the intended operational electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential or commercial areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by National Instruments could void your authority to operate it under your local regulatory rules.

Caution To ensure the specified EMC performance, operate this product only with shielded cables and accessories.

Caution This product may become more sensitive to electromagnetic disturbances in the operational environment when test leads are attached or when connected to a test object.

Caution To ensure the specified EMC performance, the length of all I/O cables must be no longer than 3 m (10 ft).

Verifying the System Requirements

To use the NI-SCOPE instrument driver, your system must meet certain requirements.

Refer to the product readme, which is available on the driver software media or online at *ni.com/manuals*, for more information about minimum system requirements, recommended system, and supported application development environments (ADEs).

Unpacking the Kit

Caution To prevent electrostatic discharge (ESD) from damaging the device, ground yourself using a grounding strap or by holding a grounded object, such as your computer chassis.

1. Touch the antistatic package to a metal part of the computer chassis.
2. Remove the device from the package and inspect the device for loose components or any other sign of damage.

Caution Never touch the exposed pins of connectors.

Note Do not install a device if it appears damaged in any way.

3. Unpack any other items and documentation from the kit.

Store the device in the antistatic package when the device is not in use.

Preparing the Environment

Ensure that the environment in which you are using the NI 5132/5133 meets the following specifications:

USB Modules

Operating Environment

Ambient temperature range.....0 °C to 45 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2.)

Relative humidity range.....10% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)

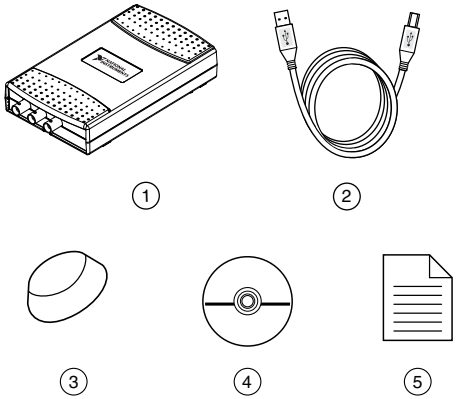
Maximum altitude.....2,000 m (at 25 °C ambient temperature)

Pollution Degree.....2

Indoor use only.

Kit Contents

Figure 1. NI 5132/5133 Kit Contents



1. NI USB-5132/5133 Device
2. USB cable
3. Rubber feet for secure desktop use
4. Driver Software DVD
5. NI USB-5132/5133 Getting Started Guide (this document)

Other Equipment

There are required items not included in your device kit that you need to install or operate the NI 5132/5133.

- 1/8 in. flat-head screwdriver (for mounting your device to a standard DIN rail)
- A desktop or laptop computer and its documentation

Installing the Software

You must be an Administrator to install NI software on your computer.

1. Install an ADE, such as LabVIEW or LabWindows™/CVI™.
2. Insert the driver software media into your computer. The installer should open automatically.

   If the installation window does not appear, navigate to the drive, double-click it, and double-click `autorun.exe`.
3. Follow the instructions in the installation prompts.

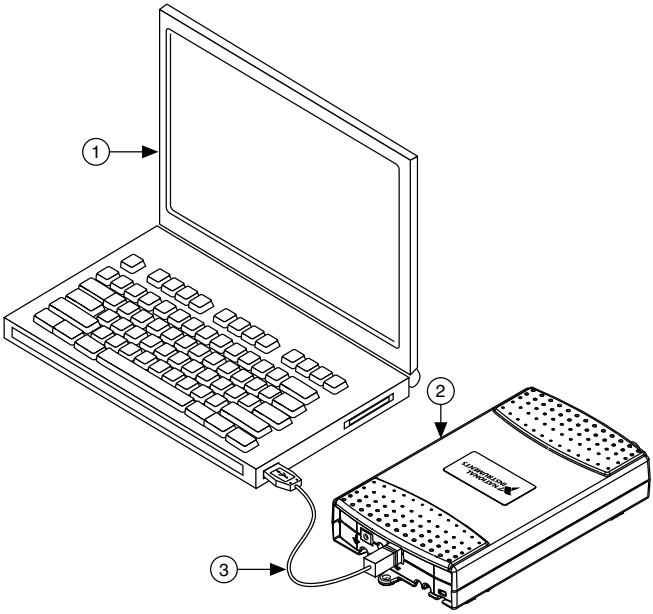
   Note Windows users may see access and security messages during installation. Accept the prompts to complete the installation.

   Note If installing from the NI Device Drivers DVD, select **Modular Instruments**»**NI-SCOPE** for installation.
4. When the installer completes, select **Restart** in the dialog box that prompts you to restart, shut down, or restart later.
5. If you are using a system running the LabVIEW Real-Time Module, download NI-SCOPE to the target using Measurement & Automation Explorer (MAX). For more information, refer to the *Max Remote Systems Help* by selecting **Help**»**Help Topics**» **Remote Systems** in MAX.

Installing the Hardware

To install the NI 5132/5133, connect the USB cable to the PC and the oscilloscope.

Figure 2. USB Installation



1. Laptop Computer
2. NI USB High-Speed Oscilloscope
3. USB Cable

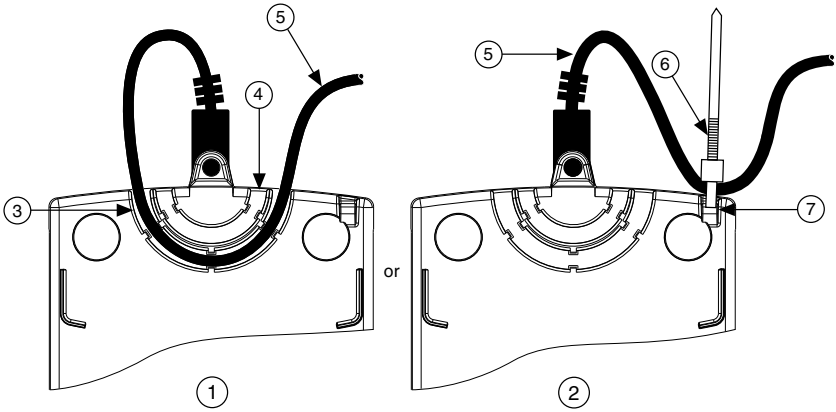
Note When you first install a NI 5132/5133, Windows will recognize a new device. Click **Next** on any dialog boxes that appear to complete the installation.

Providing USB Cable Strain Relief

There are two strain relief options available with your USB device.

- Groove Method: Press the USB cable into one of the two grooves on the underside of the of the USB device. Choose the USB cable groove that matches your USB cable size.
- Zip Tie Method: Thread a zip tie through the zip tie bar on the underside of the USB device and tighten around the USB cable.

Figure 3. USB Cable Strain Relief Options



1. Groove Method
2. Zip Tie Method
3. USB Cable Strain Relief Groove (Large)
4. USB Cable Strain Relief Groove (Small)
5. USB Cable
6. Zip Tie
7. Zip Tie Bar

Mounting the USB Device

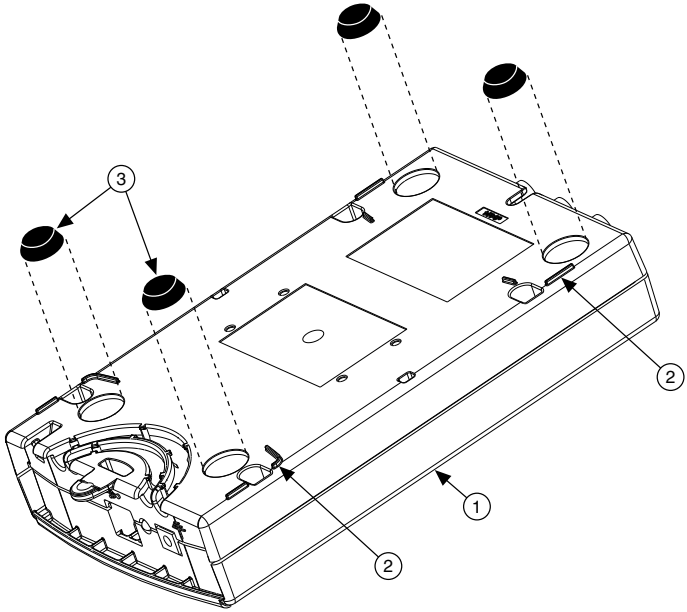
Preparing the USB Device for Desktop Use

The NI 5132/5133 has plastic guides on the underside that allow it to be stacked on top of other NI 5132/5133 devices.

To prepare the NI 5132/5133 for secure desktop use, adhere the supplied rubber non-skid feet to the underside of the device.

Note Do not apply the rubber feet if you are panel mounting the NI 5132/5133 or stacking it on top of another NI 5132/5133 device.

Figure 4. Applying Rubber Feet to the USB Device



1. NI USB High-Speed Oscilloscope
2. Plastic Guides
3. Rubber Feet

Mounting the USB Device to a DIN Rail

The DIN rail mounting kit (part number 779689-01, not included in your NI 5132/5133 kit) is an accessory you can use to mount the NI 5132/5133 to a standard DIN rail.

Note Apply strain relief before mounting the NI 5132/5133 to a DIN rail.

Mounting the USB Device to a Panel

To mount the NI 5132/5133 to a board or panel, complete the following steps.

Note Apply strain relief before mounting the NI 5132/5133 to a panel.

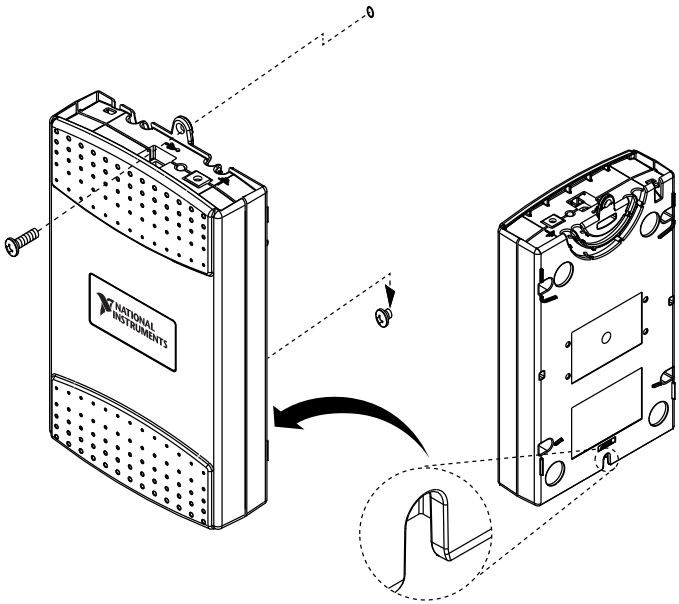
Note Do not apply rubber feet to the NI 5132/5133 when mounting the device to a panel.

1. Download and print the panel mounting template PDF attached in the KnowledgeBase document *USB-4065/5132/5133/6509 Panel Mounting Template*. Go to *ni.com/info* and enter the Info Code `rd3233` to locate the KnowledgeBase document.
2. Using the template, mark the bottom point and top point on the panel.

The points will be 162 mm (6.375 in.) apart.

3. Remove the USB cable from the connector on the NI 5132/5133.
4. Screw a #8 or M4 screw into the bottom point on the panel.

Figure 5. Mounting the NI 5132/5133 on a Panel



5. Set the NI 5132/5133 on the screw by fitting it into the bottom screw notch on the underside of the NI 5132/5133.
6. Screw a #8 or M4 screw through the NI 5132/5133 top screw hole into the panel.

Configuring the NI 5132/5133 in MAX

Use Measurement & Automation Explorer (MAX) to configure your National Instruments hardware. MAX informs other programs about which devices reside in the system and how they are configured. MAX is automatically installed with NI-SCOPE.

1. Launch MAX.
2. In the configuration tree, double-click **Devices and Interfaces** to see the list of installed devices.

   Note If you do not see your device listed, press <F5> to refresh the list of installed devices. If the device is still not listed, power off the system, ensure the device is correctly installed, and restart.
3. Record the device identifier MAX assigns to the hardware. Use this identifier when programming the NI 5132/5133.

4. Self-test the device by selecting the device in the configuration tree and clicking **Self-Test** in the MAX toolbar.

   The MAX self-test performs a basic verification of hardware resources.

5. Run the test panels on the device to verify the signal.
   a) To access the test panels, right-click the device and select **Test Panels**. The NI-SCOPE Soft Front Panel (SFP) launches automatically.
   b) Do one of the following to connect a signal to the device:
      - Connect an external signal by clicking **Auto** or by selecting the appropriate device parameters for the signal.
      - Connect a cable from PFI 1 to an input channel and select **Utility»Probe Compensation** from the SFP menu.

Note The NI 5132/5133 has self-calibration capabilities, which you can access programmatically with NI-SCOPE and your ADE, or interactively with NI-SCOPE SFP or MAX.

Programming the NI 5132/5133

You can acquire data interactively using the NI-SCOPE SFP, or you can use the NI-SCOPE instrument driver to program your device in the supported ADE of your choice.

Table 1. NI 5132/5133 Programming Options

Application Programming Interface (API)	Location	Description
NI-SCOPE SFP	Available from the start menu at **Start»All Programs»National Instruments»NI-SCOPE»NI-SCOPE Soft Front Panel**.	The NI-SCOPE SFP acquires, controls, analyzes, and presents data, similar to stand-alone oscilloscopes. The NI-SCOPE SFP operates on the PC, so you can view and control waveforms directly from your computer. You can also run multiple sessions of the NI-SCOPE SFP simultaneously.
NI-SCOPE Instrument Driver	LabVIEW—Available on the LabVIEW Functions palette at **Measurement I/O»NI-SCOPE**.	NI-SCOPE configures and operates the device hardware and performs basic waveform acquisition and measurement options using LabVIEW VIs or LabWindows/CVI functions.
	C or LabWindows/CVI—Available at **Program Files»IVI Foundation»IVI»Drivers»niScope**.	
	Microsoft Visual C/C++—Use examples located in the `<NIDocDir>\NI-SCOPE\examples` directory, where `<NIDocDir>` is one of the following directories: • Windows 8/7/Vista—`Users\Public\Documents\National Instruments` • Windows XP—`Documents and Settings\All Users\Shared Documents\National Instruments`	You can modify an NI-SCOPE C example to create an application with Microsoft Visual C/C++. Copy an NI-SCOPE example to copy required project settings for include paths and library files. Alternatively, refer to the *Creating an Application with Microsoft Visual C and C++* topic of the *NI High-Speed Digitizers Help* to manually add all required include and library files to your project.

NI-SCOPE Examples

Examples demonstrate the functionality of the device and serve as programming models and building blocks for your own applications.

The NI Example Finder is a utility available for some ADEs that organizes examples into categories and allows you to easily browse and search installed examples. You can see

descriptions and compatible hardware models for each example, or see all the examples compatible with one particular hardware model.

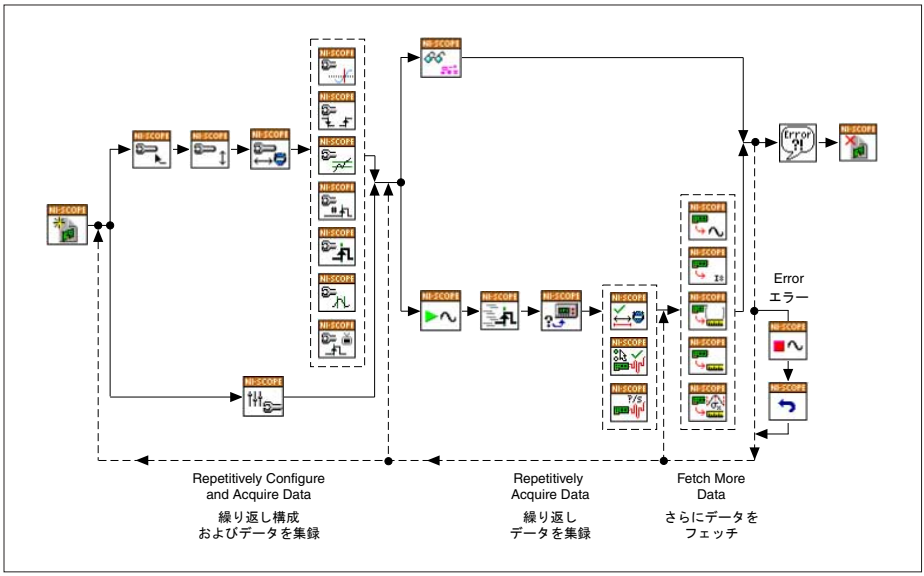
To locate examples, refer to the following table.

Table 2. Locating NI-SCOPE Examples

Application Development Environment (ADE)	Locating Examples
LabVIEW or LabWindows/CVI	Locate examples with the NI Example Finder. Within LabVIEW or LabWindows/CVI, select **Help»Find Examples**, and navigate to **Hardware Input and Output»Modular Instruments**.
ANSI C or Visual Basic	Locate examples in the `<NIDocDir>\NI-SCOPE\examples` directory, where `<NIDocDir>` is one of the following directories: • Windows 8/7/Vista—`Users\Public\Public Documents\National Instruments` • Windows XP—`Documents and Settings\All Users\Shared Documents\National Instruments`

Programming Flow

The following diagram shows the programming flow of applications using NI-SCOPE.



Making a Measurement

You can make a measurement interactively using the NI-SCOPE SFP or programmatically using LabVIEW.

Making a Measurement with NI-SCOPE SFP

1. Connect CH 0 to input signal PFI 1 using a BNC to SMB cable.
2. Launch the NI-SCOPE SFP from the **Start** menu.
3. In the **Select Device** dialog box, select the device name assigned to the device in MAX.
4. To enable signal output on PFI 1, activate the probe compensation by selecting **Utility**» **Probe Compensation**.
5. Click **Auto** to display the data as a square wave.
6. If the SFP is not already running, click **Run**.

Making a Measurement with LabVIEW

1. Launch LabVIEW.
2. Select **Help**»**Find Examples**.
3. Open the example VI that you want to use by selecting **Hardware Input and Output**» **Modular Instruments**»**NI-SCOPE (High-Speed Digitizers)**.

   Tip If you are not sure which example to run, use the Quick Start VI, which is found under **Hardware Input and Output**»**Modular Instruments**»**NI-SCOPE (High-Speed Digitizers)**»**Demos**»**niScope EX Quick Start.vi**.
4. Follow any setup instructions in the VI.
5. In the **Resource Name** drop-down menu, select the device name assigned to the device in MAX.
6. Click **Run** to run the example program.

Troubleshooting

What Should I Do if the NI 5132/5133 Doesn't Appear in MAX?

1. In the MAX configuration tree, click **Devices and Interfaces**.
2. Press <F5> to refresh the list of installed devices.
3. If the module is still not listed, power off the system, ensure that all hardware is correctly installed, and restart the system.
4. Navigate to the Device Manager.

Operating System	Description
Windows 8	Right-click the Start screen, and select **All apps»Control Panel» Hardware and Sound»Device Manager**.
Windows 7	Select **Start»Control Panel»Device Manager**.
Windows Vista	Select **Start»Control Panel»System and Maintenance»Device Manager**.
Windows XP	Select **Start»Control Panel»System»Hardware»Device Manager**.

5. Verify that a National Instruments entry appears in the system device list. Reinstall NI-SCOPE and the device if error conditions appear in the list.

What Should I Do if the Device Fails the Self-Test?

1. Restart the system.
2. Launch MAX, and perform the self-test again.
3. If the device still fails the self-test, uninstall and reinstall NI-SCOPE.
4. Perform the self-test again.
5. If the device still fails the self-test, contact NI Technical Support at *ni.com/support*.

What Should I Do if the Back Panel LED Remains Off When the NI 5132/5133 is Plugged In?

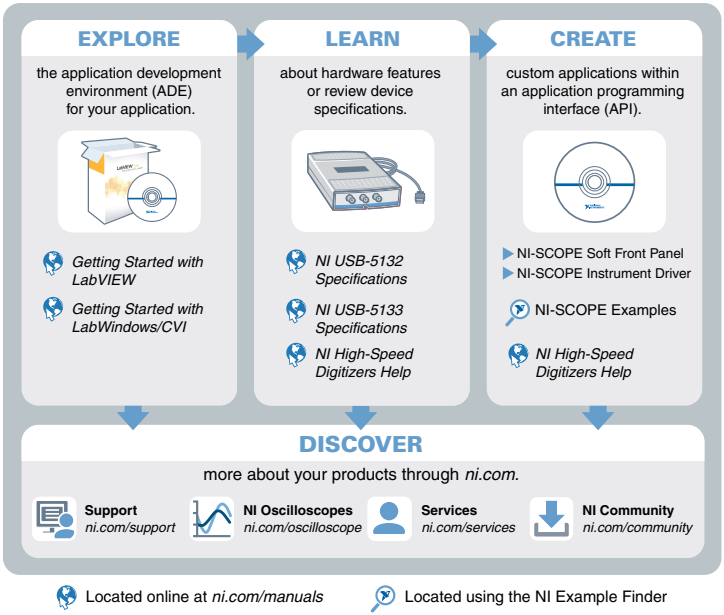
If the back panel LED fails to light after you plug the oscilloscope into the USB port, a problem may exist with the software installation, the hardware device, or the LED.

Note The LEDs may not light until the device has been configured in MAX. Before proceeding, verify that the NI 5132/5133 appears in MAX.

1. Unplug the NI 5132/5133.
2. Disconnect any signals from the USB device front panel.
3. Reinstall the NI 5132/5133.
4. Verify that the device appears in MAX.
5. Reset the device in MAX and perform a self-test.
6. If the back panel LED still fails to light, contact NI Technical Support at *ni.com/support*.

Where to Go Next

Refer to the following figure for information about other product tasks and associated resources for those tasks.



Worldwide Support and Services

The National Instruments website is your complete resource for technical support. At *ni.com/support*, you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

Visit *ni.com/services* for NI Factory Installation Services, repairs, extended warranty, and other services.

Visit *ni.com/register* to register your National Instruments product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

A Declaration of Conformity (DoC) is our claim of compliance with the Council of the European Communities using the manufacturer's declaration of conformity. This system affords the user protection for electromagnetic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting *ni.com/certification*. If your product supports calibration, you can obtain the calibration certificate for your product at *ni.com/calibration*.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world. For telephone support in the United States, create your service request at *ni.com/support* or dial 1 866 ASK MYNI (275 6964). For telephone support outside the United States, visit the

Worldwide Offices section of *ni.com/niglobal* to access the branch office websites, which provide up-to-date contact information, support phone numbers, email addresses, and current events.

Refer to the *NI Trademarks and Logo Guidelines* at ni.com/trademarks for information on National Instruments trademarks. Other product and company names mentioned herein are trademarks or trade names of their respective companies. For patents covering National Instruments products/technology, refer to the appropriate location: **Help**»**Patents** in your software, the patents.txt file on your media, or the *National Instruments Patent Notice* at ni.com/patents. You can find information about end-user license agreements (EULAs) and third-party legal notices in the readme file for your NI product. Refer to the *Export Compliance Information* at ni.com/legal/export-compliance for the National Instruments global trade compliance policy and how to obtain relevant HTS codes, ECCNs, and other import/export data. NI MAKES NO EXPRESS OR IMPLIED WARRANTIES AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN AND SHALL NOT BE LIABLE FOR ANY ERRORS. U.S. Government Customers: The data contained in this manual was developed at private expense and is subject to the applicable limited rights and restricted data rights as set forth in FAR 52.227-14, DFAR 252.227-7014, and DFAR 252.227-7015.

© 2007—2015 National Instruments. All rights reserved.

375173A-01 Jun15

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP